Green Infrastructure Statement

PROPOSED DEVELOPMENT WORKS AT LAND OFF NEW MILL ROAD, CARDIGAN, SA43 1NE

Prepared for: Wales and West Housing

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1. Introduction

RDS Landscaping Ltd were commissioned by Wales and West Housing to produce a Green Infrastructure Statement for a proposed housing development on land off New Mill Road, Cardigan, Ceredigion, SA43 1NE.

This statement has been produced in reference to the updated Chapter 6 of Planning Policy Wales on the 16th of October 2023, which sets out the policies to support 'Distinctive and Natural Places'.

- "6.0.1 The Distinctive and Natural Places theme of planning policy topics covers historic environment, landscape, biodiversity and habitats, coastal characteristics, air quality, soundscape, water services, flooding and other environmental (surface and sub-surface) risks."
- "6.2.5 A green infrastructure statement should be submitted with all planning applications. This will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal. In the case of minor development this will be a short description and should not be an onerous requirement for applicants. The green infrastructure statement will be an effective way of demonstrating positive multifunctional outcomes which are appropriate to the site in question and must be used for demonstrating how the stepwise approach (Paragraph 6.4.21) has been applied."

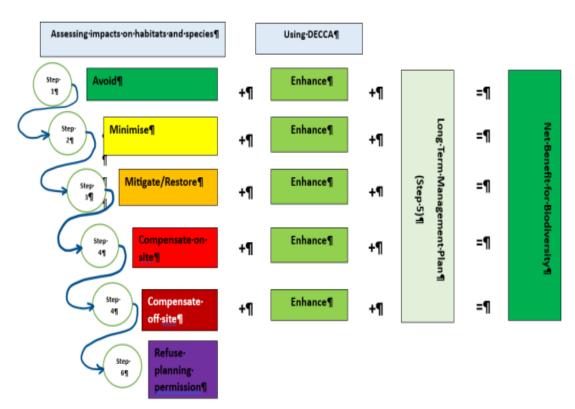


Figure 1. Summary of the Step-Wise Approach

This statement aims to provide a summary of the Green Infrastructure in relation to the preliminary design proposals outlined in the submission information pack. The following surveys and reports have been carried out within the existing landscape to inform the development proposals:

- Topographical Survey prepared by 3 Point Surveys November 2022
- Preliminary Ecological Appraisal Report, prepared by I&G Ecological Consulting Ltd - June 2023
- Agricultural Land Classification Report prepared by Davis Meade Agricultural 17th of April 2023
- BS5837:2012 Tree Survey Report, prepared by RTAC 22nd of June 2023
- Landscape and Visual Appraisal, prepared by EDP September 2023

2. The Existing Site

The site is located on the north-eastern outskirts of Cardigan, approximately one mile from the town centre, grid reference, SN 18914 47003. The site is rectangular in shape and runs in a north- westerly to south-easterly direction along the long axis.

New Mill Road runs parallel to the southern and eastern boundaries of the site. There is farmland to the east of New Mill Road and the A487 trunk road from Fishguard to Aberystwyth is located approximately 30 metres to the south. There is a large area of housing to the west of the site with some additional houses located to the north.

The whole site extends to approximately 1.9 Hectares in size and is currently utilised as agricultural pasture for grazing livestock. The habitats recorded on the site include mature species rich boundary hedgerows with sporadic feature trees and semi-improved grassland with ruderals along the periphery between the boundary hedges and central Rye grass sward. Further potential habitats identified include an ephemeral, vegetated ditch situated to the east, beneath the western boundary hedge. The site topography is slightly undulating with a gradient which falls in easterly to westerly direction.

A mosaic of elements forms the wider surrounding landscape, the conservation of these elements is vital to meet the needs of many local species. The surrounding elements include mainly small pasture fields enclosed by hedgerows with some trees and varying sized patches of woodland. Refer to Figure 2. - Site indicated by red hatch.



Figure 2. Site Location (Google Earth Image)

3. The Proposed Development

The proposed development seeks to construct 51 single and double storey homes within the site. Further construction works would include implementation of all the associated infrastructure and services required for the operation of the estate.

In order to achieve the desired layout major earthworks would be required to make the site viable for housing. In terms of levels the site would be spilt into terraces with a large retaining wall forming a boundary between the central cluster of houses. A fill batter slope would be formed along the western boundary to accommodate the row of homes above.

The houses will have off-street parking located between the shared highway and dwellings. Gardens will consist of tree lined roads and raingardens to the front of the properties and private lawned gardens enclosed with timber fencing to the rear. Vehicle access to the site would be secured via a new opening created to the south off New Mill Road with a secondary pedestrian/cycle access route provided to the north-east of the site.

The primary access road off New Mill Road would curve to the east running toward the northern corner of the site. A secondary road would split off before the bend and run parallel to the primary road terminating in the northern end of the site.

There are two separate areas of open space that will be integrated within the site. These include a large public area surrounding the large detention basin in the north-western corner of the site and an informal play and recreation area centrally positioned along the eastern boundary.

4. Green Infrastructure Baseline

The baseline information for this Green Infrastructure statement refers to the Preliminary Ecological Appraisal Report June 2023, prepared by I&G Ecological Consulting Ltd and the BS5837:2012 Tree Survey Report, 22nd June 2023, prepared by RTAC.

The Ecological report lists multiple designated conservation sites within 2km of the site. These are listed below:

- SAC AFON TEIFI / RIVER TEIFI (1102m S) designated for a range of species and habitats including Bullhead, River, Sea and Brook Lamprey, Floating Water-plantain, Otter, Atlantic Salmon and Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels.
- **SSSI AFON TEIFI** (1102m S) As above SSSI BANC Y MWLDAN (1354m NE) Lowland unimproved pastures/neutral calcareous grassland/ site of outstanding floristic and ecological interest in this predominantly acidic District. The site also has an insect fauna of national significance.
- **SSSI BANC-Y-WARREN** (1440m NE) an important site for fluvioglacial landforms and sediments.
- SSSI COEDYDD A CORSYDD ABER TEIFI (Teifi Estuary Woodlands and Marshes) (1623m S) Estuarine Marsh/freshwater marsh/herb-rich flood meadows/unvegetated mudflats which provide a feeding ground for many species of waterfowl, particularly dunlin, oystercatcher, curlew, teal, mallard and wigeon.

NRW Priority Areas.

There are several Priority Areas of habitat surrounding the site and are categorised thus (from WWBIC data results table)

- 4 Ancient Semi Natural Woodland Sites, to the south
- 4 Restored Ancient Woodland Sites to the north, east and west
- 1 NRW Priority Area (Lowland Wetland) to the northeast

Local Non-Statutory

There is 1 Wildlife Trust Reserve:

- TEIFI MARSHES (1119m S)
- 1 BEE-LINES area surrounding the site, but predominantly south of the site

The majority of the land within the site boundary is improved grassland consisting of Perennial Rye Grass (Lolium *perenne*) and semi-improved grassland with tall ruderals. The ecological survey found that this area is of negligible ecological interest, and loss of

this habitat, without mitigation is therefore considered negligible. This is the area where most of the proposed development will occur.

The remainder of the site includes habitats of boundary hedges of native woody species with bramble understory and the occasional broadleaved trees. These hedge and tree-lined boundaries are of high ecological value. Loss or damage of the Hedgerows, scrub and trees will be Major without mitigation.

The Ditch identified in the report states that "At the time of survey, it was dry, however, during less prolonged periods of drought, may provide refuge for terrestrial phase amphibians." It is recommended that an Amphibian & Reptile Mitigation Method Statement is agreed upon and that any site clearance should be undertaken in a method and to timing which limits the likelihood of death or disturbance to animals.

The Tree survey Report Recommends the removal of six (6) Ash trees all located within the boundary hedgerows. All of the trees earmarked for removal have been classified as category U trees which are deemed unsuitable for retention. The trees in question are either dead or are showing signs of the various stages of Ash dieback disease (Hymenoscyphus fraxineus).

The report notes that no other trees require removal to allow for construction of the proposed development. However, a small section of boundary hedge will need to be removed to incorporate the new site access to the south of the site off New Mill Road.

5. Green Infrastructure Strategy

The extracts below taken from Planning Policy Wales Edition 12 (2024) provide a definition of green infrastructure and its importance.

- "6.2.1 Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales and some components, such as trees and woodland, are often universally present and function at all levels. At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways, peatlands and mountain ranges or be connected networks of mosaic habitats, including grasslands. At a local scale, it might comprise parks, fields, ponds, natural green spaces, public rights of way, allotments, cemeteries and gardens or may be designed or managed features such as sustainable drainage systems. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks."
- "6.2.8 The need for ecosystems, habitats and species to adapt to climate change and other pressures should be considered as part of the Green Infrastructure Assessment. This must include identifying ways to avoid or reverse the fragmentation of habitats, and to improve habitat connectivity where appropriate, through the promotion of wildlife corridors, protection of riverine corridors and identifying opportunities for land rehabilitation, reducing pollution, landscape management and habitat restoration, creation and nature recovery."

Located within a highly interconnected landscape, the site is surrounded by a network of hedgerows extending north towards the Avon Mwldan and into neighbouring farmland to the east. To the south, across the A487, lies a vast area of similar agricultural land, featuring hedges and woodlands. The site benefits from its proximity to established wildlife corridors, making it ideally positioned to support and enhance the local ecosystem through thoughtful design. The Preliminary Ecological Appraisal Report Recommends the following ecological enhancement measures:

- Protect and enhance the existing boundary hedgerows and trees.
- It is recommended that the roadside boundary hedgerow is strengthened by additional tree planting to fill gaps and to widen hedgerows/corridor. All planting will be managed appropriately to benefit wildlife. Final development layout may allow for further sections of hedgerow, which would ideally connect to existing hedging/scrub pockets. This will facilitate connectivity between the site and surrounding habitats.
- New buildings will include artificial habitats such as bat bricks/boxes, bird boxes/bricks or Swift/Swallow cups as appropriate; the details of which should be agreed with the LA ecologist.
- Existing mature trees can support bird nesting boxes and artificial bat roosts.
- All non-native Invasive species will be removed from site following agreed methodology, to limit such species spreading to the wild.

Additionally, the general GI measures included within the proposed development layout are described below:

- Hedgerows and Native Tree Species Planting of new hedgerows and using native tree species throughout the site and along the boundaries to enhance local biodiversity.
- Ecological Enhancement Improving existing natural features and creating habitat and creating connections to broader ecological networks including Bee-Lines.
- Wildlife Habitats Installation of bird and bat boxes within buildings and trees, use of bee bricks and hedgehog-friendly fencing for movement through the site.
- Native Species in Public Spaces Public amenity spaces will feature native plants to create attractive and healthy environments for pollinators and other wildlife.
- **SuDS**: Wildlife-friendly plant mixes will be used in rain gardens and attenuation basins for stormwater management.
- **Public Footpath/Cycle route** A new pedestrian footpath and cycle route will link to neighbouring green spaces and allow movement beyond the site.
- Sustainable Landscaping -Use of permeable hard surfaces to manage stormwater runoff.
- **Bat-Friendly Lighting** A lighting scheme designed to minimize disturbance to bats.
- Recreation Areas Large area of public open space and an informal area for play and recreation will be provided.

The Proposed Landscape Scheme (Refer to Appendix 8.1 Landscape Scheme Design) illustrates how both the existing and new green and blue (SuDS) infrastructure will be integrated within the proposed development. Additionally, a preliminary Ecological Enhancement Plan suggests the proposed positions and quantities of the various biodiversity enhancements for wildlife within the development. The specific green infrastructure targets are detailed below.

A. Existing Boundary Vegetation

All site boundaries contain native trees and hedgerow species. These areas are to be retained and protected as natural habitat and function as an ecological corridors. A permanent buffer zone will be created between the boundary hedges and the development area. The buffer zone will be protected by a 2-5 meter temporary construction exclusion zone (CEZ) which would be erected prior to any construction activity taking place. (Refer to BS5837 Tree Survey 22 June 2023 – Tree Protect Plan - TPP). The trees and hedgerows add both ecological and amenity value to the site and therefore need to be maintained accordingly. Any existing or resulting gaps within the hedgebanks will be filled with new planting of native woody hedge species (Refer to: Appendix 8.2 Proposed Planting Strategy).

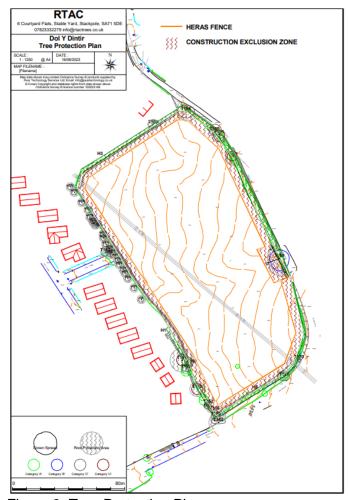


Figure 3. Tree Protection Plan

B. Landscape Rehabilitation and Amenity Planting

1. Native Trees

The scheme includes the establishment of boundary tree planting along the eastern and southern boundaries, as specimen street trees and within the public open space (POS) around the estate. Tree selection includes several hardy native species as well as fruit trees. The trees will provide character to the park as well as soften the structures and provide year-round interest. Fruit trees will provide a valuable food source for a range of species within the area (birds, mammals and insects). Tree species to include Sessile Oak (*Quercus petraea*), Rowan and Whitebeam (*Sorbus spp.*), Field maple (*Acer campestre*) and Bird cherry (*Prunus avium*).



Figure 4. Example of roadside tree planting.

2. Hedgerows

Native hedging will be established along the new and existing boundaries within the site and as rehabilitation to close the existing site entrance. Native species will include Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*) and Holly (*Ilex aquifolia*) etc. The native hedgerows will provide habitat, food and serve as wildlife corridors within the site.



Figure 5. Example of native hedge planting and grassland

3. Wild meadow and Grassland

Areas of grassland and wildflower meadow will be established along the periphery of the site as remediation for earthworks and as pockets or swards within the POS. These areas will provide green corridors through the development and between the new and existing boundaries, they would be maintained as rank grassland and meadow. The grassland will provide habitat for reptiles and amphibians as well as offer secluded areas for wildlife to travel, hunt and forage. Meadow wildflowers will attract invertebrates including butterflies and bees to the area. Planting will include a mix of wildflowers and grasses. Seed should preferably be locally sourced (Eg, Wyndrush Wild – Wildflower meadow mix) Plant species to include Red Fescue (Festuca rubra), Cuckoo flower (Cardamine pratensis) and Meadow buttercup (Rununculus acris) etc.



Figure 6. Example of native wildflowers

C. SuDS

A preliminary drainage strategy design has been prepared by CB3 Consult Ltd. (Ref Engineering Drawing - Drainage Strategy Plan_RevE). This strategy will be subject to SAB approval. The proposed SuDS strategy utilises several features which would bring a more sustainable approach to stormwater management within the site. The SuDS features include bio-retention planter boxes, rain gardens and a large detention basin. These planned features have been incorporated within the landscape scheme and provide further opportunities for soft landscaping through the site. The systems will ultimately add value by improving amenity and providing a sense of space, additionally they will provide visual interest through the different seasons and create an informal buffer between the highway and the new homes. The following SuDS features are proposed:

- Raised Bio Retention planter boxes to the front of the new houses. To take stormwater off the roofs of the new houses. Runoff from these will discharge into the roadside raingardens.
- Roadside Rain gardens to collect highway stormwater runoff. Gardens will be
 planted with a diverse selection of ornamental species including Scabiosa
 caucasica, Dierama pendula, Berginia cordifolia and Libertia grandiflora. These
 plants will provide colour and interest for residents and visitors as well as provide
 opportunities for wildlife
- A large detention basin will be developed within the north-western corner of the site. This basin will be responsible for the attenuation of the excess stormwater discharged from the features. The basin will be seeded with local meadow grasses and plugged with native macrophytes along the margins. The basin will provide habitat for amphibians as well as increase biodiversity and amenity. Macrophytic plant species utilised would include soft rush (*Juncus effusus*) and Flag Iris (*Iris pseudacorus*). Wild grass to include Tufted Hair Grass (*Deschampsia cespitosa*) and Meadow Fuscue (*Schedonorus pratensis*).
- Maintainable porous driveway surfaces. The private parking areas will be paved with permeable block paving.



Figure 7. Example of SuDS Basin



Figure 8. Example of Bio-retention planter



Figure 9. Indicative Bio Retention planter box

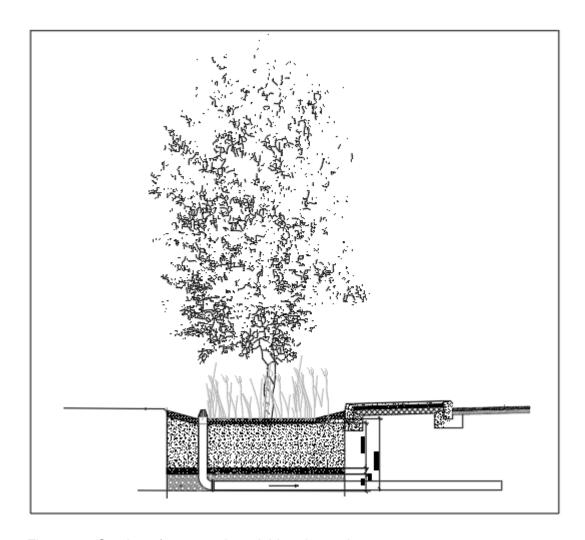


Figure 10. Section of proposed roadside rain gardens

D. Biodiversity Enhancement

To protect and enhance the biodiversity of the development area, the following management applications are prescribed to the outlined ecologically important organisms identified within the site. The aims to enhance biodiversity for fauna within the site are:

- 1. To protect and encourage nesting and foraging birds
- 2. To protect and encourage nesting and foraging bats
- 3. To protect any reptiles
- 4. To improve the site for insects
- 5. To improve the site for the use of hedgehogs and other mammals

A Preliminary Ecological Enhancement Plan has been prepared to provide details of the proposed features that would be adopted within the development site. (Refer to Appendix 8.3 Ecological Enhancement Plan).

1. Bird boxes

To compensate for the loss of nesting habitat and to enhance the site for birds it is recommended that artificial bird boxes will be integrated into approximately 20% of the new properties. Bird boxes to be installed would include five (5) Swift/Swallow nest cups and five (5) House Sparrow Terraces (Figure 11) which should be affixed to the new building

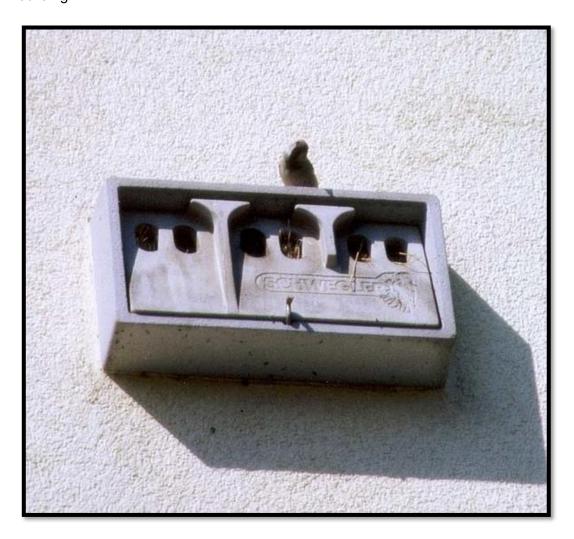


Figure 11. Schwegler 1SP Sparrow Terrace

2. Bat Boxes

The proposed development will result in loss of foraging and commuting habitat for bats. New native trees and hedgerows will be established throughout the development to mitigate for habitat loss and provide extra foraging opportunities for bats. Bat friendly lighting will be implemented throughout the site, Refer to the detailed lighting strategy. Additionally, to ensure that the development has no further impact on bats. 10 external surface mounted bat boxes (Figure 12) will be included on the new dwellings to enhance roosting opportunities.



Figure 12. Beaumaris WoodStone Bat Box Midi

3.Reptiles

The Preliminary Ecological Appraisal recommends that an Amphibian & Reptile Mitigation Method Statement is required and would need be agreed upon. Any site clearance should be undertaken in a method and to timing which limits the likelihood of death or disturbance to animals. A strategically positioned hibernacula could potentially provide refuge for any reptiles or amphibians which may be affected by proposed construction activities.

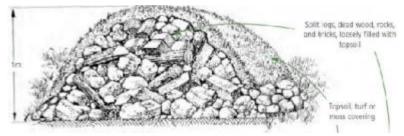


Figure 13. Hibernacula

4.Insects

To enhance the site for insects, it is intended that a wide variety of micro-habitats will be maintained and further created throughout the site. These habitats will include insect friendly planting of native hedges and wildflowers which will attract several insect species including bees and butterflies to the area. Additionally, the detention basin will provide another habitat and water source for insects such as damsels and dragonflies.

5.Hedgehogs

Several boundary fences within the site will include 'hedgehog highways', where a 15cm-by-15cm hole is cut in the base of any fences to allow hedgehogs to move between gardens, so increasing their access to foraging and nesting sites (Figure 15).



Figure 14. Hedgehog Highway

6. Green Infrastructure Benefits

The proposed green infrastructure measures offer a range of environmental and social benefits:

Improved Aesthetics and Amenity

• **Green Screening** - Tree and hedgerow planting aid in softening the built structures and create a more visually appealing space and character.

• **Permeable Paving -** Allows for attractive hard landscaping options and textures including pedestrian routes, perimeter pathways and car parking areas.

Enhanced Environmental Sustainability

- **Permeable Paving** Reduces stormwater runoff, lessening the burden on drainage systems and potentially reducing the risk of flooding. It can also help replenish groundwater.
- Rain Gardens & Attenuation basin Filter stormwater runoff, removing pollutants
 like oil and sediment before it enters waterways, protecting water quality. They also
 help to reduce the burden on storm drains and will provide visually attractive
 gardens as well as provide habitat for fauna including amphibians.
- Tree and Hedgerow Planting Trees and hedgerows absorb air pollutants and carbon dioxide thereby improving air quality. They also provide shade, reducing the heat island effect in urban areas.
- Habitat Creation Green infrastructure features like shrubs, trees, and rain gardens can provide habitat for pollinators and other wildlife, promoting biodiversity.

Benefits for Residents

- **Improved Air Quality -** Reduced air pollution from trees hedgerows and rain gardens creates a healthier environment for residents.
- Reduced Heat Stress Shade from trees provides a more comfortable outdoor environment, especially important for older adults.
- **Visual Appeal** A more attractive environment with landscaping and green features can improve resident well-being and create a more pleasant living space.

7. Conclusion

This statement effectively demonstrates a commitment to integrating green infrastructure and enhancing biodiversity from the earliest design stages, ensuring that both environmental and community well-being are prioritised throughout the development process.

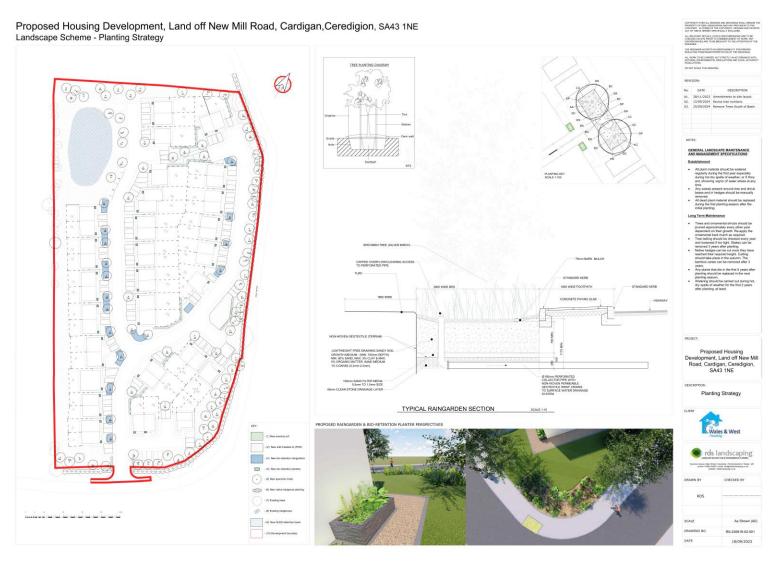
The proposed landscape design strategy preserves and enhances the site's existing features while introducing new planting zones, native hedgerows, and rainwater attenuation systems that mitigate environmental impacts and boost biodiversity. The design creates vibrant, multi-functional green spaces, including green corridors and shared community gardens, strategically designed to improve access and safety for both residents and wildlife. This balance of sensitive architecture and green infrastructure strengthens the connection between people and nature, contributing to community well-being and ensuring a sustainable, enriching environment for the future.

The scheme aligns with the objectives of Planning Policy Wales (Edition 11) and principally the updated Chapter 6 of the Planning Policy Wales, which promotes biodiversity and nature conservation and emphasises the importance of "Distinctive and Natural Places."

8. Appendix



8.1 Landscape Masterplan



8.2 Planting Strategy



8.3 Ecological Enhancement Plan